

CERTIFICATE OF MAILING (37 CFR 1.8(a))



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Daniel T. Daly et al.

Serial No. 09/152,852

Filed September 14, 1998

For: EMULSIFIED WATER-BLENDED FUEL COMPOSITIONS

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Group Art Unit: 1764

Examiner: J. Johnson

DECLARATION UNDER 37 C.F.R. 1.132

I, Brian B. Filippini, declare and state the following:

(1) I received the degree of PhD. in chemistry from Ohio State University in 1995. I have been employed by The Lubrizol Corporation, the assignee of the above-identified application, since 1995. My title at Lubrizol is Research Manager, and I consider myself to have expertise in the field of water-blended fuel compositions.

(2) I am familiar with the invention disclosed in the above-identified patent application.

(3) The tests described below were conducted at The Lubrizol Corporation at my direction.

(4) Samples A, B and C, the formulations for which are disclosed in the following table, were prepared in a Waring blender using mixing at high speed. Sample A used Surfactant No. 1. Sample B used a mixture of Surfactants Nos. 1 and 2. Sample C used Surfactant No. 3. Surfactant No. 1 consisted of 40% by weight active chemicals and 60% by weight inactive chemicals. Surfactants No. 2 and No. 3 consisted of 100% by weight active chemicals. Each of the Samples A, B and C employed the surfactants at a

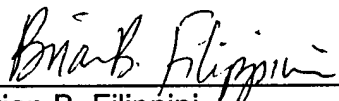
total active chemical concentration of 1.0% by weight. In Sample A, the concentration of Surfactant No. 1 was 2.5% by weight to provide an active chemical concentration for this surfactant of 1.0% by weight. In Sample B, the concentration of Surfactant No. 1 was 1.25% by weight, and the concentration of Surfactant No. 2 was 0.5% by weight, to provide a total active chemical concentration for these surfactants of 1.0% by weight. In Sample C, Surfactant No. 3 was employed at a concentration of 1.0% by weight to provide a total active chemical concentration of 1.0% by weight. Samples A, B and C were prepared by mixing the appropriate surfactant(s) with the diesel fuel to provide a fuel composition, and mixing the NH_4NO_3 with the water to provide an aqueous composition, and then combining the fuel composition and aqueous composition and mixing the resulting combination in the Waring blender to provide the desired water blended fuel compositions. Mixing in the Waring blender was conducted under two separate sets of conditions, one being for 20 seconds, and the other being for 5 minutes. The formulations for each of these samples were as follows:

	<u>Sample</u>		
	<u>A</u>	<u>B</u>	<u>C</u>
Diesel Fuel	77.5	78.25	79.0
Water	19.5	19.5	19.5
Surfactant No. 1: Ester/salt made by reacting polyisobutene ($\text{Mn}=2000$) substituted succinic anhydride (ratio of succinic groups to polyisobutene equivalent weights = 1.7:1) with dimethylethanol amine at molar ratio of 1:2 (40% by weight active chemicals)	2.5	1.25	—
Surfactant No. 2: Ester/salt made by reacting hexadecenyl succinic anhydride with dimethylethanol amine at molar ratio of 1:1.35 (100% active chemicals)	—	0.5	—
Surfactant No. 3: Triton X-102 (product of Dow Chemical identified as condensate of octylphenol and ethylene oxide) (100% active chemicals)	—	—	1.0
NH_4NO_3	0.5	0.5	0.5

(5) In the first test, the samples were mixed in the Waring blender for 20 seconds, and then allowed to stand for 3 hours at room temperature. The samples were then photographed, and the photograph of each sample is depicted in Attachment I. Sample A-I has the formulation for Sample A. Sample B-I has the formulation for sample B. Sample C-I has the formulation for Sample C. Samples A-I and B-I show no separation. These samples could be described as 100% white emulsions. Sample C-I shows 16% water separation/sediment, indicating poor emulsion stability.

(6) In the second test, the samples were mixed in the Waring blender for 5 minutes, and then allowed to stand for 3 hours at room temperature. The samples were then photographed, and the photograph of each sample is depicted in Attachment II. Sample A-II has the formulation for Sample A. Sample B-II has the formulation for Sample B. Sample C-II has the formulation for Sample C. Samples A-II and B-II show no separation. These samples could be described as 100% white emulsions. Sample C-II shows 13% water separation/sediment, indicating poor emulsion stability.

I, Brian B. Filippini, declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

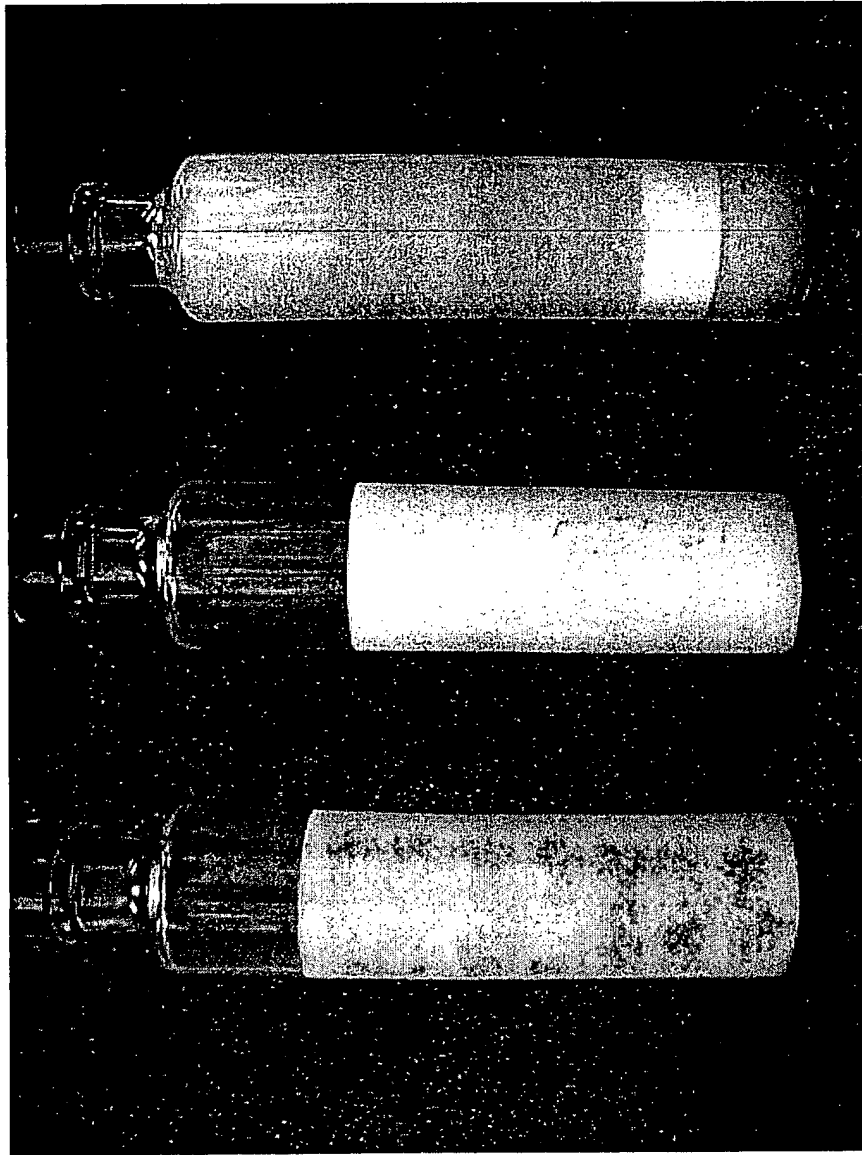


Brian B. Filippini

Date: February 24, 2003

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Attachment I



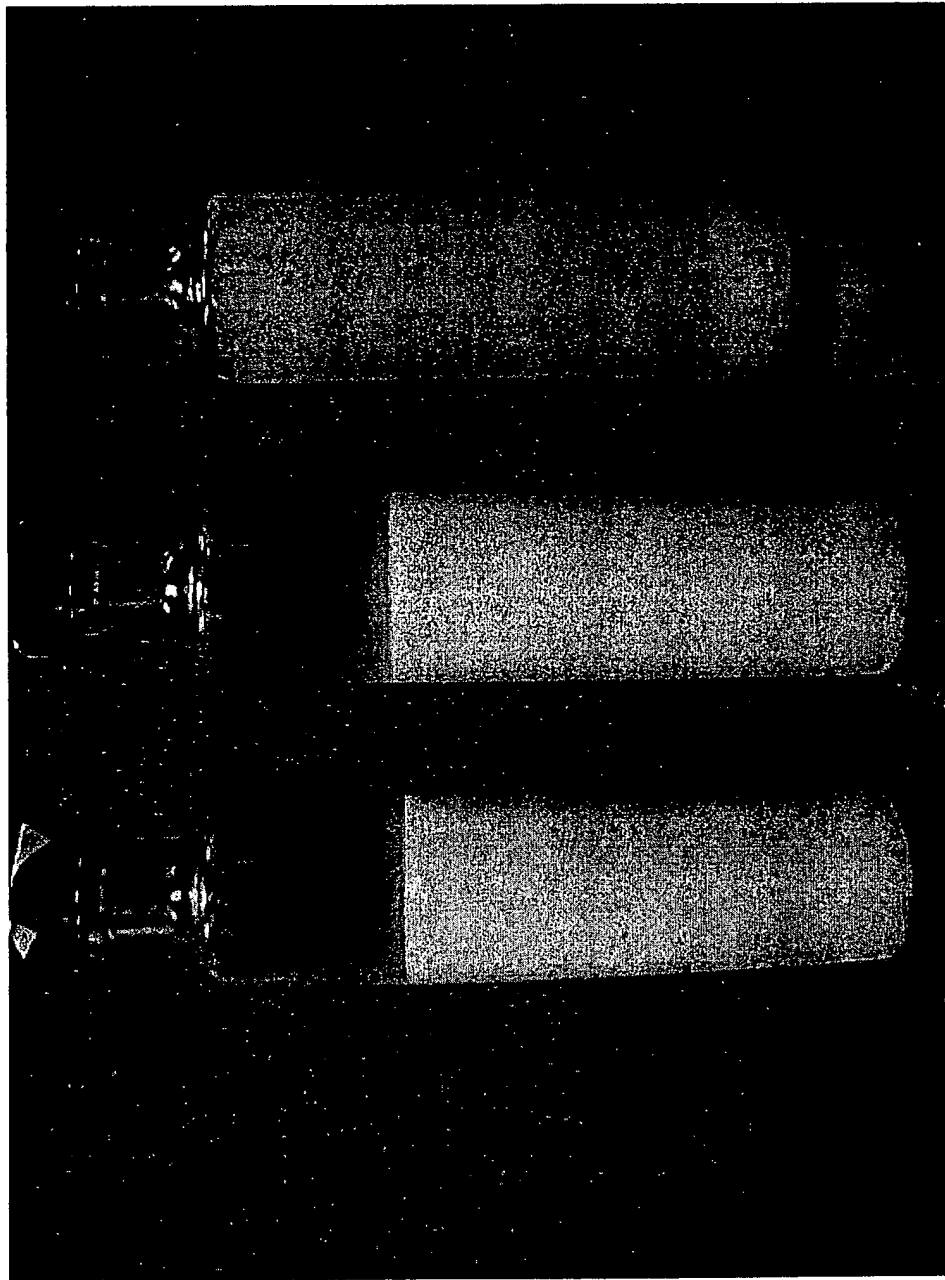
Sample A-I

Sample B-I

Sample C-I



Attachment II



Sample A-II

Sample B-II

Sample C-II

